

Application Number 10/696,491
Preliminary Amendment dated August 10, 2006

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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (Currently Amended): A method ~~comprising~~ comprising:
sequentially displaying a plurality of two-dimensional body templates, each of the body templates illustrating a view of an external surface of a human body rotated an angle about an axis;

receiving input from a user indicating a region of one of the body templates;
regenerating the body template to illustrate the indicated region on the template; and
displaying the regenerated body template.

Claim 2 (Original): The method of claim 1, wherein the plurality of body templates comprises a front view template and a back view template.

Claim 3 (Original): The method of claim 1, wherein the plurality of body templates comprises a front view template, a right-side view template, a back view template, and a left-side view template.

Claim 4 (Currently Amended): The method of claim 1, wherein the regenerated body template is a first one of the body templates that illustrates a portion of the surface, and a second body template illustrates at least some of the portion of the surface illustrated by the first body template ~~the method further comprising:~~

generating a second one of the body templates to illustrate at least some of the portion of the surface illustrated by the first one of the body templates and at least a portion of the region indicated by the user; and

displaying the second one of the body templates.

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Claim 5 (Original): The method of claim 1, wherein sequentially displaying the body templates comprises sequentially displaying the body templates according to commands received from a user.

Claim 6 (Currently Amended): The method of claim 5, wherein sequentially displaying the body templates according to commands received from a user comprises displaying the body templates according to commands received via at least one of a body view selection button and a direction arrow.

Claim 7 (Currently Amended): The method of claim 5, wherein sequentially displaying the body templates according to commands received from a user comprises:

displaying a first one of body templates;
receiving a command from the user;
generating a second one of the body templates according in response to the command;
and
displaying the second one of the body templates.

Claim 8 (Cancelled).

Claim 9 (Currently Amended): The method of claim ~~[[8]]~~ 1, wherein sequentially displaying the body templates comprises sequentially displaying the body templates via a display, and receiving input from a user comprises receiving input from the user via the display.

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Claim 10 (Currently Amended): The method of claim **[[8]] 1**, wherein sequentially displaying the body templates comprises:

displaying a first one of the body templates;

generating a second one of the body templates to illustrate a view of the external surface of the human body, wherein the angle of rotation of the surface about the axis is based on the proximity of the received body region indication to an edge of the first one of the body templates; and

displaying the second one of the body templates.

Claim 11 (Currently Amended): The method of claim **[[8]] 1**, wherein the input comprises a two-dimensional polygon outline of the indicated region.

Claim 12 (Currently Amended): The method of claim **[[8]] 1**, further comprising mapping the input to a body surface coordinate system that describes the external surface of the human body.

Claim 13 (Original): The method of claim 12, further comprising generating each of the body templates based on the body surface coordinate system.

Claim 14 (Original): The method of claim 12, wherein the body surface coordinate system comprises a three-dimensional coordinate system.

Claim 15 (Currently Amended): The method of claim 14, further comprising generating the three-dimensional coordinate system by applying one of a linear interpolation, a higher-order interpolation, and or a spline technique to determine valid body coordinates.

Claim 16 (Original): The method of claim 14, wherein mapping the input into a three-dimensional body surface coordinate system comprises assigning a third coordinate to each point of the indicated region of the body template.

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Claim 17 (Original): The method of claim 12, wherein the body surface coordinate system comprises a two-dimensional coordinate system.

Claim 18 (Original): The method of claim 17, further comprising generating the two-dimensional coordinate system by mathematically peeling and flattening a representation of the external surface of the human body, and indicating continuity at edges of the body surface.

Claim 19 (Original): The method of claim 17, wherein displaying the regenerated body template comprises projecting the two-dimensional coordinate system onto a three-dimensional frame representation of the external surface of the human body.

Claim 20 (Cancelled).

Claim 21 (Currently Amended): The method of claim ~~[[8]]~~ 1, wherein regenerating the one of the body templates to illustrate the indicated region on the template comprises regenerating the one of the body templates to include shading of the indicated region on the template.

Claim 22 (Currently Amended): The method of claim ~~[[8]]~~ 1, wherein the body region indication indicates a region of at least one of pain ~~and~~ or paresthesia experienced by a patient.

Claim 23 (Currently Amended): The method of claim ~~[[8]]~~ 1, wherein the user comprises one of a patient ~~and~~ or a clinician.

Claim 24 (Currently Amended): The method of claim 1, wherein the axis comprises a vertical axis through the a center of the ~~external surface of the human~~ body.

Claim 25 (Original): The method of claim 1, wherein each of the body templates illustrates a view of the external surface of the human body rotated an angle about at least one of a plurality of axes.

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Claim 26 (Currently Amended): A computer-readable medium comprising instructions that cause a programmable processor ~~to~~ to:

sequentially display a plurality of two-dimensional body templates, each of the body templates illustrating a view of an external surface of a human body rotated an angle about an axis;

receive input from a user indicating a region of one of the body templates;

regenerate the one of the body templates to illustrate the indicated region on the template;

and

display the regenerated body template.

Claim 27 (Original): The computer-readable medium of claim 26, wherein the plurality of body templates comprises a front view template and a back view template.

Claim 28 (Original): The computer-readable medium of claim 26, wherein the plurality of body templates comprises a front view template, a right-side view template, a back view template, and a left-side view template.

Claim 29 (Currently Amended): The computer-readable medium of claim 26, wherein the regenerated body template is a first one of the body templates that illustrates a portion of the surface, and a second body template illustrates at least some of the portion of the surface illustrated by the first body template. the computer-readable medium further comprising instructions that cause a programmable processor to:

generate a second one of the body templates to illustrate at least some of the portion of the surface illustrated by the first one of the body templates and at least a portion of the region indicated by the user; and

display the second one of the body templates.

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Claim 30 (Original): The computer-readable medium of claim 26, wherein the instructions that cause a programmable processor to sequentially display the body templates comprise instructions that cause a programmable processor to display the body templates according to commands received from a user.

Claim 31 (Currently Amended): The computer-readable medium of claim 30, wherein the instructions that cause a programmable processor to sequentially display the body templates according to commands received from a user comprise instructions that cause a programmable processor to display the body templates according to commands received via at least one of a ~~body view selection button and a~~ direction arrow.

Claim 32 (Original): The computer-readable medium of claim 30, wherein the instructions that cause a programmable processor to sequentially display the body templates according to commands received from a user comprise instructions that cause a programmable processor to:

- display a first one of the body templates;
- receive a command from the user;
- generate a second one of the body templates according to the command; and
- display the second one of the body templates.

Claim 33 (Cancelled).

Claim 34 (Currently Amended): The computer-readable medium of claim ~~33~~ 26, wherein the instructions that cause a programmable processor to sequentially display the body templates and receive input from a user comprise instructions that cause a programmable processor to sequentially display the body templates and receive the input via a display.

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Claim 35 (Currently Amended): The computer-readable medium of claim ~~33~~ 26, wherein the instructions that cause a programmable processor to sequentially display the body templates comprise instructions that cause a programmable processor to:

display a first one of the body templates;

generate a second one of the body templates to illustrate a view of the external surface of the human body, wherein the angle of rotation of the surface about the axis is based on the proximity of the received body region indication to an edge of the first one of the body templates; and

display the second one of the body templates.

Claim 36 (Currently Amended): The computer-readable medium of claim ~~33~~ 26, wherein the input comprises a two-dimensional polygon outline of the indicated region.

Claim 37 (Currently Amended): The computer-readable medium of claim ~~33~~ 26, further comprising instructions that cause a programmable processor to map the input to a body surface coordinate system that describes the external surface of the human body.

Claim 38 (Original): The computer-readable medium of claim 37, further comprising instructions that cause a programmable processor to generate each of the body templates based on the body surface coordinate system.

Claim 39 (Original): The computer-readable medium of claim 37, wherein the body surface coordinate system comprises a three-dimensional coordinate system.

Claim 40 (Currently Amended): The computer-readable medium of claim 39, further comprising instructions that cause a programmable processor to generate the three-dimensional coordinate system by applying one of a linear interpolation, a higher-order interpolation, ~~and or~~ a spline technique to determine valid body coordinates.

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Claim 41 (Original): The computer-readable medium of claim 37, wherein the instructions that cause a programmable processor to map the input into a three-dimensional body surface coordinate system comprise instructions that cause a programmable processor to assign a third coordinate to each point of the indicated region of the body template.

Claim 42 (Original): The computer-readable medium of claim 37, wherein the body surface coordinate system comprises a two-dimensional coordinate system.

Claim 43 (Original): The computer-readable medium of claim 42, further comprising instructions that cause a programmable processor to generate the two-dimensional coordinate system by mathematically peeling and flattening a representation of the external surface of the human body, and indicating continuity at edges of the body surface.

Claim 44 (Original): The computer-readable medium of claim 42, wherein the instructions that cause a programmable processor to display the regenerated body template comprise instructions that cause a programmable processor to project the two-dimensional coordinate system onto a three-dimensional frame representation of the external surface of the human body.

Claim 45 (Cancelled).

Claim 46 (Currently Amended): The computer-readable medium of claim ~~33~~ 26, wherein the instructions that cause a programmable processor to regenerate the one of the body templates to illustrate the indicated region on the template comprise instructions that cause a programmable processor to regenerate the one of the body templates to include shading of the indicated region on the template.

Claim 47 (Cancelled).

Claim 48 (Currently Amended): The computer-readable medium of claim 26, wherein the axis comprises a vertical axis through ~~the a~~ center of the ~~external surface of the human~~ body.

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Claim 49 (Original): The computer-readable medium of claim 26, wherein each of the body templates illustrates a view of the external surface of the human body rotated an angle about at least one of a plurality of axes.

Claim 50 (Currently Amended): A device comprising:

a display; and

a processor to sequentially display a plurality of two-dimensional body templates via the display, each of the body templates illustrating a view of an external surface of a human body rotated an angle about an axis, receive input from a user indicating a region of one of the body templates, regenerate the body template to illustrate the indicated region on the template, and display the regenerated body template via the display.

Claim 51 (Original): The device of claim 50, wherein the plurality of body templates comprises a front view template and a back view template.

Claim 52 (Original): The device of claim 50, wherein the plurality of body templates comprises a front view template, a right-side view template, a back view template, and a left-side view template.

Claim 53 (Currently Amended): The device of claim 50,

wherein the regenerated body template is a first one of the body templates that illustrates a portion of the surface, and

wherein the processor generates a second one of the body templates to illustrate illustrates at least some of the portion of the surface illustrated by the first one of the body templates and at least a portion of the region indicated by the user, and displays the second one of the body templates via the display.

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Claim 54 (Original): The device of claim 50, further comprising a user input circuit, wherein the processor receives commands from a user via the user input circuit, and sequentially displays the body templates via the display according to the commands.

Claim 55 (Original): The device of claim 54, wherein the display comprises the user input circuit, and the processor receives the commands from the user via the display.

Claim 56 (Currently Amended): The device of claim 54, wherein the processor displays at least one of ~~a body view selection button and a rotation direction arrow~~ via the display for receiving the commands from the user.

Claim 57 (Cancelled).

Claim 58 (Currently Amended): The device of claim ~~57~~ 50,
wherein the one of the body templates comprises a first one of the body templates, and
wherein the processor generates a second one of the body templates to illustrate a view of the external surface of the human body, the angle of rotation of the surface about the axis for the second one of the body templates based on the proximity of the received body region indication to an edge of the first one of the body templates, and displays the second one of the body templates via the display.

Claim 59 (Currently Amended): The device of claim ~~57~~ 50, further comprising a memory that stores the received body region indication in a body surface coordinate system that describes the external surface of the human body.

Claim 60 (Original): The device of claim 59, wherein the processor generates each of the body templates based on the body surface coordinate system.

Claim 61 (Original): The device of claim 59, wherein the body surface coordinate system comprises a three-dimensional coordinate system.

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Claim 62 (Currently Amended): The device of claim 61, wherein the processor generates the three-dimensional coordinate system by applying one of a linear interpolation, a higher-order interpolation, ~~and~~ or a spline technique to determine valid body coordinates.

Claim 63 (Original): The device of claim 59, wherein the body surface coordinate system comprises a two-dimensional coordinate system.

Claim 64 (Original): The device of claim 63, wherein the processor generates the two-dimensional coordinate system by mathematically peeling and flattening a representation of the external surface of the human body, and indicating continuity at edges of the body surface.

Claim 65 (Original): The device of claim 63, wherein the processor displays one of the body templates by projecting the two-dimensional coordinate system onto a three-dimensional frame representation of the external surface of the human body.

Claim 66 (Cancelled).

Claim 67 (Currently Amended): The device of claim ~~57~~ 50, wherein the display comprises the user input circuit, and the processor receives the input via the display.

Claim 68 (Original): The device of claim 67, wherein the user interacts with the display using a stylus.

Claim 69 (Cancelled).

Claim 70 (Original): The device of claim 50, wherein the device comprises a programming device to program a neurostimulation therapy device that provides electrical stimulation to a patient.

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Claim 71 (Original): The device of claim 50, wherein the device comprises a handheld computing device.

Claim 72 (Currently Amended): A method comprising:
displaying a two-dimensional body template that illustrates a view of an external surface of a human body;
receiving input from a user indicating a region of the body template, wherein the input comprises a two-dimensional polygon outline of the indicated region; and
mapping the input to a body surface coordinate system that describes the external surface of the human body.

Claim 73 (Original): The method of claim 72, wherein displaying the body template comprises generating the body template from the body surface coordinate system.

Claim 74 (Original): The method of claim 72, wherein receiving input from the user comprises receiving input from the user via a display.

Claim 75 (Cancelled).

Claim 76 (Currently Amended): The method of claim 72, wherein the body surface coordinate system comprises one of a three-dimensional coordinate system and or a two-dimensional coordinate system.

Claim 77 (Original): The method of claim 76, wherein mapping the input into a three-dimensional body surface coordinate system comprises assigning a third coordinate to each point of the indicated region of the body template.

Claim 78 (Original): The method of claim 72, further comprising regenerating the body template from the coordinate system subsequent to receiving the user input, and redisplaying the body template to illustrate the indicated region.

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Claim 79 (Original): The method of claim 78, wherein regenerating the body template to illustrate the indicated region on the template comprises regenerating the body template to include shading of the indicated region on the template.

Claim 80 (Currently Amended): The method of claim 78, wherein the regenerated body template comprises a first body template that illustrates a first view of the surface, the method further comprising:

generating a second body template to illustrate a second view of the surface of the body, wherein the surface is rotated an angle about an axis relative to the first view, and the second body template illustrates at least a portion of the indicated region of the first body template~~indicated by the user input~~; and

displaying the second body template.

Claim 81 (Currently Amended): The method of claim 72, wherein the body region indication indicates a region of at least one of pain or ~~and~~ paresthesia experienced by a patient.

Claim 82 (Original): The method of claim 72, further comprising:

storing the coordinate system within a memory, the coordinate system including the mapped user input; and

generating body templates based on the coordinate system for presentation of the user input to a clinician.

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Claim 83 (Currently Amended): A computer-readable medium comprising instructions that cause a programmable processor to:

display a two-dimensional body template that illustrates a view of an external surface of a human body;

receive input from a user indicating a region of the body template, wherein the input comprises a two-dimensional polygon outline of the indicated region; and

map the input to a body surface coordinate system that describes the external surface of the human body.

Claim 84 (Original): The computer-readable medium of claim 83, wherein the instructions that cause a programmable processor to display the body template comprise instructions that cause a programmable processor to generate the body template from the body surface coordinate system.

Claim 85 (Original): The computer-readable medium of claim 83, wherein the instructions that cause a programmable processor to receive input comprise instructions that cause a programmable processor to receive input via a display.

Claim 86 (Cancelled).

Claim 87 (Currently Amended): The computer-readable medium of claim 83, wherein the body surface coordinate system comprises one of a three-dimensional coordinate system and or a two dimensional coordinate system.

Claim 88 (Original): The computer-readable medium of claim 87, wherein the instructions that cause a programmable processor to map the input into a three-dimensional body surface coordinate system comprise instructions that cause a programmable processor to assign a third coordinate to each point of the indicated region of the body template.

Claim 89 (Original): The computer-readable medium of claim 83, further comprising instructions that cause a programmable processor to:

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regenerate the body template from the coordinate system subsequent to receiving the user input; and

redisplay the body template to illustrate the indicated region.

Claim 90 (Original): The computer-readable medium of claim 89, wherein the instructions that cause a programmable processor to regenerate the body template to illustrate the indicated region on the template comprise instructions that cause a programmable processor to regenerate the body template to include shading of the indicated region on the template.

Claim 91 (Currently Amended): The computer-readable medium of claim 89, wherein the regenerated body template comprises a first body template that illustrates a first view of the surface, the computer-readable medium further comprising instructions that cause a programmable processor to:

generate a second body template to illustrate a second view of the surface of the body, wherein the surface is rotated an angle about an axis relative to the first view, and the second body template illustrates at least a portion of the indicated region of the ~~first body template~~ ~~indicated by the user input~~; and

display the second body template.

Claim 92 (Original): The computer-readable medium of claim 83, further comprising instructions that cause a programmable processor to:

store the coordinate system within a memory, the coordinate system including the mapped user input; and

generate body templates based on the coordinate system for presentation of the user input to a clinician.

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Claim 93 (Currently Amended): A device comprising:
a display to display a two-dimensional body template that illustrates a view of an external surface of a human body;
a user input circuit to receive input from a user indicating a region of the body template,
wherein the input comprises a two-dimensional polygon outline of the indicated region;
a memory to store a body surface coordinate system that describes the external surface of the human body; and
a processor to display the body template via the display, and map the user input to the body surface coordinate system.

Claim 94 (Original): The device of claim 93, wherein the processor generates the body template from the body surface coordinate system.

Claim 95 (Original): The device of claim 93, wherein the display comprises the user input circuit.

Claim 96 (Cancelled).

Claim 97 (Currently Amended): The device of claim 93, wherein the body surface coordinate system comprises one of a three-dimensional coordinate system and or a two-dimensional coordinate system.

Claim 98 (Original): The device of claim 97, wherein the processor maps the input into the three-dimensional body surface coordinate system by assigning a third coordinate to each point of the indicated region of the body template.

Claim 99 (Original): The device of claim 93, wherein the processor regenerates the body template from the coordinate system subsequent to receiving the user input via the user input circuit, and redisplay the body template to illustrate the indicated region.

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Claim 100 (Original): The device of claim 99, wherein the processor regenerates the body template to illustrate the indicated region by regenerating the body template to include shading of the indicated region on the template.

Claim 101 (Currently Amended): The device of claim 99,
wherein the regenerated body template comprises a first body template that illustrates a first view of the surface, and
wherein the processor generates a second body template to illustrate a second view of the surface of the body rotated by an angle about an axis relative to the first view, the second body template illustrating at least a portion of the indicated region ~~of the first body template indicated by the user input~~, and displays the second body template via the display.

Claim 102 (Currently Amended): The device of claim 93, wherein the body region indication indicates a region of at least one of pain or ~~and~~ paresthesia experienced by a patient.

Claim 103 (Original): The device of claim 93, wherein the memory stores the coordinate system including the mapped user input, and the processor generates body templates based on the coordinate system for presentation of the user input to a clinician via the display.

Claim 104 (Original): The device of claim 93, wherein the device comprises a programming device for programming an implantable medical device.

Claim 105 (Original): The device of claim 93, wherein the device comprises a handheld computing device.

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Claim 106 (New): A method comprising:

depicting rotation of an external surface of a human body about at least one axis;
receiving input from a user indicating a region of the external surface; and
storing the received region indication in a body surface coordinate system that describes the external surface of the human body.

Claim 107 (New): The method of claim 106, further comprising:

shading the indicated region of the surface; and
depicting further rotation of the external surface and the shaded region about the axis.

Claim 108 (New) The method of claim 106, wherein depicting rotation of the external surface comprises sequentially displaying a plurality of two-dimensional body templates, each of the body templates illustrating a respective one of a plurality of views of the external surface.

Claim 109 (New): The method of claim 108, wherein displaying a plurality of two-dimensional body templates comprises displaying at least three two-dimensional body templates.

Claim 110 (New): The method of claim 106, wherein depicting rotation and receiving input comprises depicting rotation and receiving input via a display.

Claim 111 (New): The method of claim 106,

further comprising receiving commands from a user,
wherein depicting rotation comprises controlling at least one of a direction and a speed of the rotation according to the commands.

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Claim 112 (New): A computer-readable medium comprising instructions that cause a programmable processor to:

- depict rotation of an external surface of a human body about at least one axis;
- receive input from a user indicating a region of the external surface; and
- store the received region indication in a body surface coordinate system that describes the external surface of the human body.

Claim 113 (New): The computer-readable medium of claim 112, further comprising instructions that cause a processor to:

- shade the indicated region of the surface; and
- depict further rotation of the external surface and the shaded region about the axis.

Claim 114 (New) The computer-readable medium of claim 112, wherein the instructions that cause a processor to depict rotation of the external surface comprise instructions that cause a processor to sequentially display a plurality of two-dimensional body templates, each of the body templates illustrating a respective one of a plurality of views of the external surface.

Claim 115 (New): The computer-readable medium of claim 114, wherein the instructions that cause a processor to display a plurality of two-dimensional body templates comprise instructions that cause a processor to display at least three two-dimensional body templates.

Claim 116 (New): The computer-readable medium of claim 112, wherein the instructions that cause a processor to depict rotation and receive input comprise instructions that cause a processor to depict rotation and receive input via a display.

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Claim 117 (New): The computer-readable medium of claim 112,
further comprising instructions that cause a processor to receive commands from a user,
wherein the instructions that cause a processor to depict rotation comprise instructions
that cause a processor to control at least one of a direction and a speed of the rotation according
to the commands.

Claim 118 (New): A device comprising:
a display; and
a processor to depict rotation of an external surface of a human body about at least one
axis via the display, receive input from a user indicating a region of the external surface, and
store the received region indication in a body surface coordinate system that describes the
external surface of the human body.

Claim 119 (New): The device of claim 118, wherein the processor shades the indicated
region of the surface, and depicts further rotation of the external surface and the shaded region
about the axis via the display.

Claim 120 (New) The device of claim 118, wherein the processor depicts rotation of the
external surface by sequentially displaying a plurality of two-dimensional body templates via the
display, each of the body templates illustrating a respective one of a plurality of views of the
external surface.

Claim 121 (New): The device of claim 120, wherein the processor displays at least three
two-dimensional body templates.

Claim 122 (New): The device of claim 118, wherein the processor receives the input via a
display.

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Claim 123 (New): The device of claim 118,
further comprising a user interface,
wherein the processor receives commands from a user via the user interface, and controls
at least one of a direction and a speed of the rotation according to the commands.